

REMARKS

Favorable reconsideration and allowance of the subject application are respectfully requested in view of the following remarks.

Summary of the Office Action

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5).

The Abstract is objected to because it has more than 150 words.

Claims 1-11 are objected to because of minor informalities.

Claims 1, 4-5, 7, 17, and 20-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,810,156 to Itoh in view of U.S. Patent No. 5,881,164 to Ichikawa.

Claims 2, 6, 18 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh combined with Ichikawa as applied to claims 1 and 7 above, and further in view of U.S. Patent No. 5,774,478 to Noguchi et al.

Claims 3 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh, Ichikawa and Noguchi et al. as applied to claims 1, 2, 17 and 18 above, and further in view of U.S. Patent Publication No. 2005/0254650 to Sakurai et al. and U.S. Patent No. 5,347,599 to Yamashita et al.

Claims 8, 10, 23 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh and Ichikawa as applied to claims 1, 7 and 17 above, and further in view of U.S. Patent No. 6,757,444 to Matsugu et al.

Claims 12 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh, Ichikawa and Matsugu et al. as applied to claims 1, 7 and 8 above, and further in view of U.S. Patent Publication No. 2003/0128894 to Bobrov et al.

Claims 14 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh and Ichikawa and Noguchi et al.

Claims 15 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh and Ichikawa as applied to claims 1, 7, 8, 17 and 23 above, and further in view of Matsugu et al. and Bobrov et al.

Claims 9, 11, 13, 16, 24, 26, 28 and 31 have been indicated as containing allowable subject matter.

Summary of the Response to the Office Action

Applicants have amended the specification to make the objected-to drawings comply with 37 C.F.R. § 1.84(p)(5) and the objected-to Abstract to have no more than 150 words. Also, Applicants have amended claims 1, 5, 9, 12 and 28 to improve their form. Moreover, Applicants respectfully submit the rejections under 35 U.S.C. § 103(a) are improper and therefore should be withdrawn. Accordingly, claims 1-31 remain pending in this application for further consideration.

Objection to Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5). Applicants have amended the specification. Specifically, reference numerals 32 and 33 in FIG. 11 and reference numerals 42, 43, 44, 45 and 46 in FIG. 12 are described in the specification.

Applicants respectfully submit that the drawings now fully comply with 37 CFR 1.84(p)(5).

Accordingly, Applicants respectfully request that the objection to the drawings be withdrawn.

Objection to the Specification

The Abstract is objected to because it has more than 150 words. Applicant has amended the Abstract to be no more than 150 words. Accordingly, Applicants respectfully request that the objection to the disclosure be withdrawn.

Objection to Claims

Claims 1-11 are objected to because of minor informalities. Applicants have amended claims 1, 5, 9 and 12 in accordance with the Examiner's comments set forth in Section 3 of the Office Action. Accordingly, Applicants respectfully request that the objection to claims 1-11 be withdrawn.

All Claims Define Allowable Subject Matter

Claims 1, 4-5, 7, 17, and 20-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh in view of Ichikawa. Claims 2, 6, 18 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh combined with Ichikawa as applied to claims 1 and 7 above, and further in view of Noguchi et al. Claims 3 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh, Ichikawa and Noguchi et al. as applied to claims 1, 2, 17 and 18 above, and further in view of Sakurai et al. and Yamashita et al. Claims 8, 10, 23 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh and Ichikawa as applied to claims 1, 7 and 17 above, and further in view of Matsugu et al. Claims 12

and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh, Ichikawa and Matsugu et al. as applied to claims 1, 7 and 8 above, and further in view of Bobrov et al. Claims 14 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh and Ichikawa and Noguchi et al. Claims 15 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh and Ichikawa as applied to claims 1, 7, 8, 17 and 23 above, and further in view of Matsugu et al. and Bobrov et al. Applicants respectfully traverse the rejections for at least the following reasons.

With respect to independent claim 1, Applicants respectfully submit that Itoh and Ichikawa, whether taken individually or in combination, do not teach or suggest the claimed combination including at least a feature of “substantial angle detection circuitry capable of determining a substantial angle having the highest correlation based on filtered differential values of at least some of the pixel pairs.”

The present invention checks detected angle information among horizontally neighboring angle results. The Office Action concedes on page 5 that “Itoh does not disclose the substantial angle detection circuitry capable of determining a substantial angle having the highest correlation based on filtered differential values of at least some of the pixel pairs as recited in claim 1.” However, the Office Action relies upon Ichikawa to teach this feature. Specifically, the Office Action alleges that “Ichikawa teaches an image data processing method and image data processing apparatus, where the differential values of the image memory are filtered in the line segment emphasis filter (column 3, lines 54-57).” In contrast to the present invention in which the substantial angle detection uses either recursive filter or checking previous (such as adjacent) angle detection result, as described in paragraph [0047] (claim 1 shows substantial angle detection uses “filtered differential values” and this includes recursive filter or the like),

Ichikawa merely teaches using a 2-dimensional filter (FIG. 3), which is completely different from the present invention. In other words, Applicants respectfully submit that Itoh and Ichikawa, whether taken individually or in combination, do not teach or suggest the claimed combination including at least the feature of “substantial angle detection circuitry capable of determining a substantial angle having the highest correlation based on filtered differential values of at least some of the pixel pairs,” as recited by independent claim 1.

For similar reasons as those set forth above, Applicants respectfully submit that Itoh and Ichikawa, whether taken individually or in combination, do not teach or suggest the claimed combination including at least the feature of “substantial angle detection circuitry capable of determining a substantial angle having the highest correlation based on filtered differential values of at least some of the pixel pairs, wherein the substantial angle detection circuitry includes a recursive filter capable of filtering the differential values of at least some of the pixel pairs in the window and outputting the filtered differential values,” as recited by independent claim 14.

For similar reasons as those set forth above, Applicants respectfully submit that Itoh and Ichikawa, whether taken individually or in combination, do not teach or suggest the claimed combination including at least the feature of “determining a substantial angle having the highest correlation based on filtered differential values of at least some of the pixel pairs, wherein the step of determining the substantial angle includes filtering the differential values of at least some of the pixel pairs in the window using a recursive filter,” as recited by independent claim 29.

With regard to independent claim 12, Applicants respectfully submit that Itoh, Ichikawa, Matsugu et al. and Bobrov et al., whether taken individually or in combination, do not teach or suggest the claimed combination including at least a feature of “a first valley detector capable of

comparing the differential values of consecutive sets of immediately adjacent pixel pairs within the selected region and determining a pixel pair having the differential value that is smaller than the differential values of available immediately adjacent pixel pairs to the left and to the right in the selected region.” Applicants respectfully submit that the claimed “valley detector” is one of the implementation style of substantial angle detection circuit which serves to check adjacent angle detection result. Applicants respectfully submit that none of the applied references teaches or suggests using trend of angle detection result among the neighborhood result (such as result is increasing, decreasing or local minimum like valley shape, etc.)

For similar reasons as those set forth above, Applicants respectfully submit that Itoh, Ichikawa, Matsugu et al. and Bobrov et al., whether taken individually or in combination, do not teach or suggest the claimed combination including at least a feature of “comparing the differential values of consecutive sets of immediately adjacent pixel pairs within the selected region and determining a first valley pixel pair, wherein the first valley pixel pair has a differential value that is smaller than the differential values of available immediately adjacent pixel pairs to the left and to the right in the selected region,” as recited by independent claim 27.

MPEP § 2143.03 instructs that “[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 U SPQ 580 (CCPA 1974).” Accordingly, for at least the forgoing reasons, Applicants respectfully assert that the rejections of independent claims 1, 12, 14, 17, 27 and 29 under 35 U.S.C. § 103(a) should be withdrawn. Furthermore, Applicants respectfully assert that dependent claims 1-11, 13, 15-16, 18-26, 28 and 30-31 are allowable at least because of their dependencies from the respective independent claims 1, 12, 14, 17, 27 and 29 and the features recited therein.

With no other rejections pending, Applicants respectfully assert that claims 1-31 are in condition for allowance.

CONCLUSION

In view of the foregoing, Applicants respectfully request entry of the amendments, reconsideration and the timely allowance of all pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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